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ABSTRACT

Trends in the level of borrowing by graduate and professional students, and the capacity of students to repay their education debt are considered. In addition, sources of debt data and implications of this information for national student aid and data collection policy are addressed. Attention is also directed to levels of indebtedness between graduate students in the arts and sciences and students enrolled in professional schools; the levels of indebtedness among fields within the arts and sciences; and the future earnings and debt burden of graduate and professional students. Debt burden refers to the portion of a borrower's future earnings that will be needed to repay educational loans. Five major fields are analyzed: business, law, medicine, arts and science Ph.Ds, and arts and science masters. The data for analyzing student debt came from the Graduate and Professional Student Financial Aid Service, the National Center for Education Statistics, and the Association of American Medical Colleges. Estimates of future earnings by occupational fields were derived from Census Bureau and National Research Council data. It was found that students in medicine and law had the highest estimated debt, while students seeking a masters or Ph.D in the arts and sciences showed lower indebtedness. (SW)

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The Educational Indebtedness of Graduate and Professional Students

Terry W. Hartle
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April 1983

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Prepared for the National Commission on Student Financial Assistance.

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The opinions expressed do not necessarily reflect the position of the National Commission on Student Financial Assistance.

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Introduction

One of the responsibilities of the National Commission on Student Financial Assistance was to examine the level of graduate student indebtdeness -- who borrows? how much? is borrowing excessive? Recent media accounts of steep tuition increases at various medical and professional schools have further spurred interest in this issue. As a result, the Commission wished to gather as much information as possible about education debt for advanced degree students. For this report the authors were asked to review the available sources of graduate and professional student debt data, examine the trends in the level of borrowing, analyze the capacity of students to repay their education debt, and outline the implications of this information for national student aid and data collection policy.

Several factors were of special interest to the Commission staff and these became the focus of our analysis. First, the Commission wanted to differentiate levels of indebtedness between graduate students in the arts and sciences and students enrolled in professional schools (business, law, medicine). Second, the Commission staff wanted to assess the levels of indebtedness among fields within the arts and sciences. To address these issues, the first section of the report analyzes the differences in student debt levels across fields of study.

Even if there were no significant differences in debt levels, however, another area of concern was the ability of graduates in diffeent fields to repay their loans. The Commission believed, for example, that those who received a degree in humanities would have, on average, lower earnings than physicians or attorneys. They wondered whether these students would have exceptional difficulty in meeting their educational debts. To address this

issue, the second section of the analysis estimates the future earnings and debt burden of graduate and professional students.

As our examination of graduate and professional student debt progressed we uncovered a number of shortcomings in the availability of nationally-applicable current and comprehensive data about graduate and professional students. For example, in order to estimate charges at medical schools we had to rely on published tuition data for first-year medical students to which we added an estimate of room and board costs based on an average charged to university graduate students. Throughout this report we will identify these and other data shortcomings.

A Reason to Borrow

Since the high cost of postbaccalaureate education forces some students into debt, it is important to address two basic questions about graduate and professional education: How much does the average graduate or professional student pay to attend school for one year? How have these charges increased during the past decades? Those familiar with data on educational costs will realize that the answers to these straightforward questions are surprisingly difficult to obtain. The results of our efforts can be seen in Table 1. What is most interesting about Table 1 is what must be omitted. Since 1976, when the National Center for Education Statistics (NCES) discontinued the survey of Students Enrolled for Advanced Degrees, it has not been possible to determine postbaccalaureate enrollment by field of study in odd numbered years. Also, there are no readily available graduate student charges data for the years 1972 and 1975-1978.[1]

[1] NCES apparently has collected this information but has never tabulated it.

For professional students there is no separate accounting of the overall charges at law, medical and business schools although the Association of American Medical Colleges (AAMC) does publish first-year medical school costs (which we have used in Table 1).

According to the available data, the demand for graduate education, as expressed by enrollments, has fluctuated in recent years after having reached a plateau of about 1.33 million between 1977 and 1979. Between 1971 and 1981 the average annual rate of growth in enrollments amounted to only three percent. Only medical school enrollments, which increased at five percent annually, rose faster than the other programs. During roughly the same period, average student charges rose from about $2000 in 1971 to almost $4000 in 1980 — an annual rate of 8.3 percent. Medical students were again the exception. During this period the annual growth in medical school charges was 11 percent and, given current anecdotal information, this rate of increase is likely to continue. The combination of enrollment growth and cost increases have kept revenues from students charges (enrollments multiplied by average per student charges) rising at a substantial rate of 12 percent per year, from $2.05 billion in 1971 to $5.7 billion by 1980. (Table 1)

Although some graduate and professional students receive fellowships and research assistantships, average charges (not including transportation and miscellaneous costs) approach $4500 per year. In some fields and institutions the costs are much higher. As a result, many graduate students must borrow money to cover their education-related expenses. Students in disciplines without major sources of fellowship and assistantship funds (i.e. medicine and law) must rely heavily upon loans. The utilization of loans by students in various graduate and professional fields is discussed in the next section.

Student Debt Levels

This section of our report analyzes the level of indebtedness that students incur in graduate and professional school. What we are concerned with here is simply the total amount of money that students will owe at the conclusion of their postbaccalaureate education. Five major fields are analyzed: business, law, medicine, arts and science Ph.Ds, and arts and science masters.

Data on Student Indebtedness

The data for analyzing student debt come from several sources: the Graduate and Professional Student Financial Aid Service (GAPSFAS), the National Center for Education Statistics (NCES), and the Association of American Medical Colleges (AAMC). These data bases each provide different information and are subject to different limitations.

GAPSFAS - The Graduate and Professional Student Financial Aid Service (GAPSFAS) is a need-based financial aid system used by almost 100,000 students each year. Students who submit a GAPSFAS application are asked to provide a comprehensive description of income and expenses for themself, their parents, and, where appropriate, their spouse. The information requested includes both degree objective and the level and sources of educational and non-educational debt. While some graduate and professional schools use the American College Testing Program and the College Scholarship Service to calculate student financial need, GAPSFAS is the only one to collect extensive information about student indebtedness.

Despite its usefulness, there are several shortcomings that must be considered. First, GAPSFAS filers represent only a fraction of graduate and professional students, a fraction that is not representative of all segments of the postbaccalaureate population. The data overrepresent

students enrolled in professional school (law, business, medicine) programs. Sixty-two percent of the GAPSFAS filers are in one of these three fields.[1] In addition, the majority of GAPSFAS filers (54.3 percent) are applying for their first year of graduate or professional school. In addition, because need-based assistance is limited to full-time students, the GAPSFAS data base does not include part time students. Finally, the majority of GAPSFAS filers (78.2 percent) are currently enrolled in private schools.

A second limitation is that individuals using GAPSFAS are merely applying for assistance. They are not necessarily those who will attend graduate or professional school. Indeed, it is not clear that GAPSFAS filers have (or will) even apply to a postbaccalaureate program. Moreover, students who use GAPSFAS are applying before an academic year begins. Thus it is possible to determine what these students owe at the start of their first, second, or third year in school, but it is not clear what they will owe at the end of that year. While GAPSFAS information provides valuable clues about the progression of student debt, it does not reveal the cumulative debt a student faces at the conclusion of his education. We have addressed this problem by estimating a cumulative debt burden, but the figures must be regarded only as approximations.

Finally, GAPSFAS data are based on materials filed by a large number of individual students; it is not the longitudinal record of student borrowing. Because rules and regulations governing federal student assistance programs change, so does the utilization of student loans.

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[1] While a sampling of data for Arts and Science fields was attempted according to National Commission specifications, the sample size remained too small to permit the extensive analysis we had hoped.

More liberal student loan terms, such as those authorized under the Middle Income Student Assistance Act (MISSA) will expand student borrowing, while more narrow terms, like the changes enacted in the Reconciliation Act of 1981 will reduce it. GAPSFAS, because of the data it collects, is incapable of making distinctions regarding individual borrowing patterns. All students -- those who borrowed under liberal terms and those who borrowed under restrictive conditions -- are lumped together.

NCES - The National Center for Education Statistics data used in this anaylsis are from the 1981 Survey of Recent College Graduates. This survey, primarily designed to gather information about the existing supply of teachers and to determine the labor force participation of recent college graduates trained as teachers, is statistically representative of baccalaureate and master's recipients across all fields. Participating students are asked to indicate the exact dollar amount of their educational debt.[1] This survey provides essential baseline information on levels of debt for all bachelors and masters degree recipients and allows an excellent source for comparing information obtained from data sources.

There are drawbacks to the NCES data. First, the survey covers graduate students at the master's degree level only and excludes Ph.D. and professional degree students in law and medicine. Second, the data show only cumulative debt, and not the pattern of borrowing while at the undergraduate or graduate level. Finally, while the NCES data are representative of the population it samples, the survey is oriented toward students who majored in education and does not offer a large sample for all fields of study.

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[1] Specifically, the survey asks students "Did you have any debt that was directly related to your education (tuition and fees, room and board, books and supplies, and transportation to and from school)? Students who indicated such debts were asked to specify the amount they owed.

AAMC - The final source of information used to measure student indebtedness is the graduation survey of the Association of American Medical Colleges (AAMC). The survey asks graduating medical students a number of questions relating to their educational program, including the size and source of their educational debt. This information is very accurate and complete. It does not, however, show the progression of student debt, nor does it include any fields except medicine. Finally, because of the way in which the questionnaire is structured, it does not allow for the calculation of unambiguous debt levels for those with both undergraduate and medical school borrowing.

Obviously, none of these data bases include all the information about student debt that educators and policymakers might desire. By reviewing each of these sources, however, it is possible to obtain some basic information about this issue. As with any study that relies on multiple data bases, such an approach is subject to some degree of error. Nonetheless, we believe it was the only possible approach given the time and resources available for the study.

Before reviewing the magnitude of debt at the graduate and professional level, it is necessary to place those data in perspective by briefly describing the extent of debt at the undergraduate level.

Levels of Student Indebtedness

Bachelor's Degree Recipients. According to NCES data (Table 2), 35.2 percent of 1980 college graduates incurred educational debt while completing their baccalaureate degrees. There was, however, some variation in the percentage of students who had debt. Humanities students were somewhat less likely to borrow (31.2 percent) while biological science (37.2) and physical science (37.0) students were somewhat more likely. Of the

baccalaureates with debt, the median level of indebtedness was $2500. When measured by field of study, the amount of educational debt showed little variation. Business and education majors had the lowest median debt levels ($2400), while physical science students had the highest ($3100).

There are major differences between the debt patterns of students at public and private institutions. According to NCES, 32.6 percent of public graduates had educational debt, while 42.2 percent of those from private institutions reported educational borrowing. Public school students had a median debt of $2000. Private school gracuates, by contrast, had a median debt of $3000, or 50 percent higher than public institution students. In all fields of study, students from private institutions were more likely to have debt -- and a higher level of debt -- than public school students.

Master's Degree Recipients. A smaller percentage of master's degree recipients (23.4) reported debts than did bachelor's recipients (Table 3). Students graduating from private institutions were more likely to report master's degree debt than public sector graduates. According to Table 3, 22.0 percent of public institution graduates had educational debt while 28.2 percent of private school graduates reported such borrowing. The median amounts of debt were $2500 for public graduates and $3900 for private.[1]

The median debt for bachelor's and master's degree recipients is identical -- $2500 in both cases. Despite this apparent similarity, at the graduate level there is much greater variation in the percentage of

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[1] NCES figures represent the indebtedness incurred only while pursuing a master's degree. Total indebtedness for undergraduate and graduate study is likely to be higher.

master's degree recipients in biological science, the median level of debt is $6700, the average indebtedness is $10,100 and the top 25% of these graduates have debt above $9600. For humanities students, the median debt is $5000, the average borrower owes $8400, and the upper quarter of students have debt above $5000.

The distribution of student debt is illustrated more precisely in Table 4. For those receiving bachelor's degrees, the lowest quartile of students owed $1300 or less. Those in the highest quartile of debt owed $4500 or more. Among master's degree recipients, 25 percent of the students with debt owed $1500 or less and another 25 percent owed $5000 or more.

Indebtedness of Graduate/Professional Students

Graduate and professional students incur varying degrees of indebtedness in financing their education. This section reviews the level of debt for students in each of five major fields. The summary results of this analysis are shown in Chart 1. According to this chart, the median debt of most first year graduate and professional students is quite similar -- between $4000 and $5000. During the course of their postbaccalaureate education, however, the debt levels diverge considerably.

Business - According to the NCES Survey of Recent College Graduates, only about one-quarter (23.0 percent) of all 1980 MBA graduates incurred educational debt (Table 3). The estimated median indebtedness of these students was $5700.[1]

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[1]Median indebtedness here is calculated by combining the NCES undergraduate median debt for business majors ($2400) with the NCES median debt for master's degree recipients ($3300).

students with debt and in debt levels than was observed at the undergraduate level.

Among master's degree recipients, engineering and education students were least likely to have debt (19.6 percent and 19.8 percent, respectively) and had among the lowest median debt levels ($2400 for engineers and $2000 for education). At the other end of the scale, students in masters level health professions, biological sciences and humanities were most likely to report educational debts (40.8 and 42.2 percent, respectively) while biological science students reported the highest median level of indebtedness ($4200).

Some interesting patterns emerge when master's degree debt is examined by field of study and institutional control. In three fields, masters-level graduates from private schools had much higher debt levels than their public school counterparts. These were humanities ($5000 in private, $2000 in public), health professions and biological sciences ($7000 in private, $2800 in public), and business ($4500 in private, $3000 in public). By contrast, in two other fields (physical science and engineering), student debt levels in private institutions were actually lower than for public school graduates.

According to the NCES data, for both baccalaureate and master's degree graduates in every field, the mean or average level of student indebtedness is much higher than the median debt. This is an important distinction. Median debt is that level at which one-half the respondents are above and the other half are below. Mean debt is the average indebtedness of all students who report debt. The higher level of mean debt indicates that a number of respondents have very high levels of indebtedness and thus push the average level well above the median. For example, among

The GAPSFAS data, however, show both a higher debt level and a higher percentage of borrowers. GAPSFAS filers pursuing an MBA degree with median borrowing levels had $4100 in debt when applying to graduate school and will have approximately $9900 in debt upon graduation. (Table 5) Applicants in the lower quartile of debt will have $7800 in debt when they complete their education, compared to a debt level of $13,500 for those at the highest quartile.

The GAPSFAS data also reveal that most applicants pursuing an MBA degree borrow to finance their education. The percentage of first year applicants who report having educational loans is 53.2 percent. By the second year, however, 90.4 percent of the applicants report educational debt.

Law - Law students usually spend three years completing their professional education. GAPSFAS filers pursuing a law degree have a median debt of $4700 when applying and an estimated cumulative debt of $14,700. (Table 6) Students in the lower quartile of debt have $2500 in educational loans when entering law school and approximately $12,500 when they finish. Students in the upper quartile of debt reported indebtedness of $7000 when applying to law school and we estimate a debt of $18,100 when they are done.

As with business students, most law students in the GAPSFAS population accumulate at least some educational debt. 63.4 percent of the entering students reported debt (compared with 53.2 percent of the business students). By the start of the second year, 94.4 percent of the GAPSFAS filers reported having educational loans and in the third year 96.2 percent were in debt.

Medicine - The most comprehensive information on medical student indebtedness is available in the Graduation Survey conducted by the Association of American Medical Colleges. In 1982, this survey received responses from 10,938 (68 percent) of the nation's medical school graduates. Among the items on the survey, respondents were asked to indicate whether they had debt from their premedical and/or medical education. The majority of medical students (72 percent) indicated they had no premedical school debt. Those who reported premedical borrowing had an average indebtedness of $4017. (Table 7) The majority of medical students reported having some medical school debt. According to the AAMC survey, 71.2 percent of the students had medical school debt, with an average indebtedness of $20,149. A substantial percentage of students had high debt -- more than 16 percent of the students reported obligations in excess of $30,000.[1] When premedical and medical obligations are combined, the mean indebtedness for medical school graduates reporting debt is $24,166.[2]

According to GAPSFAS, entering medical students have a median debt of $5000 and are likely to owe $24,500 when they graduate. (Table 7) At the lower end of the scale, students have approximately $2700 in debt when applying to school but accumulate over $20,000 in loans before they finish. Students with the highest debt levels enter medical school owing $7500 for their education. By the time they receive their degree, their educational debt has grown to $26,000.

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[1] When median debt is calculated, it provides slightly lower figures. Among premedical students, the median debt was $3000, for medical students, median debt was $18,999, producing a total obligation of $21,999.

[2] AAMC uses a somewhat different approach to calculate total debt and suggests that the mean debt of those with educational borrowing is $21,051.

As with business and law students, the vast majority of GAPSFAS filers in medicine borrow to finance at least part of their education. 65 percent of those planning to pursue a medical degree report having educational loans. This figure jumps to 95.2 percent for second year students, 96.8 for those in the third year, and 97.5 for fourth year students.

GAPSFAS and AAMC debt levels should be compared cautiously because they reflect different populations. One would expect students using a need-based financial aid system (GAPSFAS) to have greater educational need, and greater debt levels than the more general population reflected in the AAMC survey. Despite this difference, the median debt for medical students shows only a slight difference between these two sources: $24,166 in AAMC, $24,500 in GAPSFAS.

Arts and Science Ph.Ds - While the debt levels of professional students can be estimated rather easily, it is considerably more difficult to determine the debt of graduate students in the arts and sciences. Part of the reason for this is that graduate programs do not usually follow the clearly defined course of study associated with professional schools. Graduate students are probably more likely than their professional school counterparts to interrupt their educational program and are more likely to enroll on a part-time basis. Moreover, it frequently takes longer to earn a Ph.D. than a professional degree. These characteristics of graduate study make it difficult to establish the progression of student debt.

GAPSFAS applicants planning to pursue a Ph.D. in the arts and sciences show different borrowing patterns than those seeking a professional

degree. In general, those pursuing a doctoral degree in the arts and sciences were less likely to have educational debt and more likely to have lower debt levels than students in professional fields.

Among the first-year GAPSFAS filers planning to earn a doctoral degree, the median debt was $4500 (Table 8). But by the start of the fifth year, median debt had increased to $6800, an increase of 66 percent. This increase was much smaller, and took place over a longer period of time than for students in professional schools. A similar pattern emerges for applicants at the highest and lowest quartiles of indebtedness. Those with the lowest level of borrowing had $2500 in loans at the start of the first year and $3100 in the fifth year. At the other end of the scale, students in the highest quartile had $6900 in debt in the first year and $11,500 in the fifth year.

One interesting finding from these data is that the educational debt of the population seems to peak in the third year of study and remain fairly constant thereafter. For example, the debt of those at the median is $6800 at the start of the third year the same amount reported by students starting their fifth year. A similar pattern emerges for those in both the lowest and highest quartiles. These trends may, of course, be an artifact of the population under study. It is also possible that this finding illustrates an important difference between graduate and professional education. There are very few sources of grant, assistantship, or fellowship support for students in professional fields. While these sources of support have become increasingly scarce for those in the graduate arts and sciences, some of these remain. It is possible that the leveling of indebtedness for these students in the third through fifth years reflects the availability of such support for students who are in the final stages of a doctoral degree.

Ph.D. students are less likely to report educational debt than the other groups of students in this analysis. 55.4 percent of the first-year GAPSFAS filers report educational debt, a figure that increases to 68.5 percent in the second year. For the remaining three years, however, the percentage of students reporting debt hovers at about this level. In short, a smaller percentage of GAPSFAS applicants in arts and sciences doctoral programs report having educational debt than do applicants in professional programs.

To provide a more comprehensive analysis of student indebtedness in the arts and sciences, we analyzed the educational borrowing of a sample of students who were pursuing a graduate degree in the arts and sciences. The sample was divided into five major fields: humanities, social sciences, biological sciences, physical sciences, and other.[1] The median debt for first year GAPSFAS filers in all five arts and sciences fields is roughly the same (Table 10). By the start of the third year, GAPSFAS filers in the humanities ($6400) social sciences ($6500) and other fields ($6800) had comparable debt levels. Students in the biological and physical sciences both had somewhat lower debt levels ($5000) a tribute, perhaps, to the greater availability of tuition-stipend assistance in these fields.

Arts and Sciences Masters - GAPSFAS filers who intended to pursue a master's degree had borrowing patterns similar to students in doctoral programs. At the median, the students had a debt of $4000 when registering for GAPSFAS and an estimated debt of $6000 at the completion of their second year (Table 9). GAPSFAS students in the lowest quartile showed

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[1] We attempted to develop separate calculations for education and engineering. There were not, however, sufficient records for these fields to allow such comparison.

$2100 in debt when applying, but because of heavy borrowing in the first year, have an estimated cumulative debt level higher than students at the median level. Finally, students in the upper quartile showed a debt of $6400 when applying to graduate school and had a cumulative debt of about $10,200 at the end of their second year.

Like their Ph.D. counterparts, 55.4 percent of all first year applicants reported educational debt. By the end of the second year, however, master's degree candidates were more likely to have borrowed money for their education than doctoral students (80.9 for master's applicants versus 68.5 for doctoral students). This is, perhaps, a further indication of the availability of tuition-stipend support for doctoral training.

Separating arts and sciences master's applicants into major fields of study does not prove especially revealing (Table 10). First year applicants report slightly lower debt levels than doctoral applicants in the same fields, but the differences are minimal. With the exception of biological sciences -- which is much higher for master's degree graduates -- estimated debt at conclusion of a two year master's program are similar to the reported debt levels of students in the same fields entering the third year of a Ph.D. program.

A breakdown of the debt levels for master's degree recipients by field using NCES data provides similar results. The estimated student debt by discipline is: humanities $5000, social sciences $5500, biological sciences/ health professions $6700, physical sciences $4700, engineering $5100, business $5700, and education $4400.[1]

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[1]Debt estimates are calculated by combining bachelor's and master's degrees median debt from the 1980 Survey of Recent College Graduates. (See Tables 2 and 3).

Taken together, the GAPSFAS and NCES data suggest that the debt levels for master's degree students in the arts and sciences are similar across fields. In both cases, students in the biological sciences and health professions have slightly higher debt levels than the other fields. Students in education programs have, according to NCES, very low debt levels -- a result, perhaps, of the propensity of teachers to work full-time and earn a master's degree through part-time or summer school programs. Students in the humanities and social sciences are widely believed to be borrowing excessively. Based on this evidence, however, it seems that their debt levels are consistent with the borrowing patterns of students in other master's degree programs. If, as appears likely, tuition-stipend assistance becomes increasingly scarce in the future, it is unclear if this will remain true.

Trends in Debt Data

College costs have increased sharply in recent years. According to one recent study, between 1979 and 1981 college costs rose 22.7 percent at public institutions and 26.1 percent at private schools.[1] Not surprisingly as costs have risen, so have debt levels.

According to the Survey of Recent College Graduates, the median debt of 1977 bachelor's degree recipients was $2200. The most recent survey concluded that the median level of debt was $2500 -- increase of 13.7 percent.[2] The percentage of graduates reporting debt increased -- from 32.1 percent to 35.[illegible] percent.

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[1]Terry W. Hartle and Richard Wabnick, Discretionary Income and College Costs, Washington, D.C.: Educational Testing Service, 1982.

[2]During this period the average, or mean, student debt increased at a slightly faster rate: from $2659 in 1977 to $3200 in 1980, an increase of 20.3 percent. While this is a more rapid increase than at the median debt level, it is still in line with growth in college costs.

It is more difficult to calculate the trends in graduate and professional student debt. As noted earlier, there is no single source that provides detailed, unambiguous data for all major fields of study. Despite this, it is possible to determine the general direction of debt by comparing the results of a 1980-81 survey with the current GAPSFAS information.

In 1981, researchers at the Educational Testing Service surveyed some 11,000 graduate and professional students who had registered for either the GAPSFAS or College Scholarship Service (CSS) needs analysis system.[1] These students were asked extensive questions about their postbaccalaureate education, with special emphasis on their finances. While this survey is not strictly comparable to the GAPSFAS data base used in this study, it does provide a general picture of student debt patterns.

A comparison of the results of these studies for five major fields of study is shown below. These data show the mean cumulative educational debt for business, law, medicine, arts and sciences, and other students.[2]

	Amount of Cumulative Educational Debt for Graduate and Professional Students		
Field	1981 Debt Levels	1983 Debt Levels	Percent Change
Business*	9,771	10,661	9.1
Law**	12,930	15,587	20.5
Medicine***	24,613	27,983	13.7
Arts & Sciences***	6,533	9,555	46.2
All Others***	13,651	18,675	36.8

*two years of debt
**three years of debt
***four years of debt

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[1] Herbert J. Flamer, Dwight H. Horch, and Susan Davis, Talented and Needy Graduate and Professional Students, Princeton, New Jersey: Educational Testing Service, April 1982.

[2] The Flamer/Horch study used mean debt levels rather than median. As a result, the 1983 debt figures used to compare the 1980 results are mean or average debt. Throughout the rest of this paper we have employed median debt levels.

This evidence indicates that the level of student debt has increased over the last two years. There is, however, wide variation in the rate of increase, from a low of 9.1 percent in business to over 46 percent for arts and sciences and other students. The high rate of increase in the arts and sciences may be the product of reduced fellowship and grant funds -- forcing students to assume more loans to meet costs. Importantly, however, there is no way to determine what factors contributed to this steep increase. Moreover, given the different sources from which this information is derived, the specific amount of increase is best regarded cautiously.[1]

Graduate and Professional Student Debt Burden

The first section of this paper reviewed the evidence about student debt levels. According to the available data, students enrolled in medical, law and business schools are more likely to borrow, and to borrow more, than students who are pursuing graduate degrees in the arts and sciences. But are these students burdening themselves inordinately? Will physicians, for example, find it financially easier to repay their loans than Ph.D. recipients? Are levels of debt burden different among arts and sciences Ph.Ds?

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[1]Information from individual institutions confirms the different levels of increases in student debt. According to Harvard University, the estimated average aggregate debt of graduate and professional school graduates with educational debt between June 1981 and 1982 changed as follows:

Arts and Sciences ($3,500 to $4,000; 14.3 percent)
Dental ($23,400 to $24,000; 2.6 percent)
Design ($9,765 to $11,685; 19.7 percent)
Divinity ($5,553 to $7,256; 30.7 percent)
Education ($6,175 to $5,423; -12.2 percent)
Law ($18,750 to $18,976; 1.2 percent)
Medicine ($26,600 to $35,991; 35.3 percent)
Government ($8,000 to $11,332; 41.5 percent)
Public Health ($14,375 to $17,000; 18.3 percent)

Given the controversy and publicity surrounding student indebtedness, we might suspect that the answer to these questions is: Yes. But to determine if students will have difficulty repaying their debts, it is necessary to compare the amount students must repay with their future income. And to judge whether borrowing is excessive, it is necessary to decide how much is too much. In obtaining a home mortgage, for example, lenders usually establish some objective rule which specifies that no more than a specified amount of gross income (generally no more than one-quarter or one-third) should go toward housing debt. There are no such benchmarks for education debt. It is outside the scope of this work to suggest what these limits might be. We can, however, describe the debt burden facing current graduate and professional students using the debt level data presented previously.

What is Debt Burden?

"Debt burden" refers to the portion of a borrower's future earnings that will be needed to repay educational loans. In this context, the term represents an indicator of the student's capacity-to-repay the money owed.[1] Therefore, to analyze the debt burden of graduate and professional students we must know both:

- how much a student is required to repay and over what period of time and,
- how much discretionary income -- income after taxes and living expenses -- will be available for repayment.

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[1]For a full discussion of the capacity-to-repay concept and debt burden, see Richard Wabnick and William Goggin, Indebtedness to Finance Postsecondary Education, Washington, D.C.; Educational Testing Service, 1981. See also, Dwight H. Horch, Estimating Manageable Educational Loan Limits for Graduate and Professional Students, Princeton, N.J.: Educational Testing Service, 1978.

Repayment - How much a borrower must repay is a function of the amount borrowed, the interest rate, and the maturity period. Graduate and professional students, even more than undergraduates, have numerous opportunities to finance their education. This is especially true with respect to student loans and we may assume that advanced degree students who borrow do so from several different sources. For example, medical students may receive funds from any of five major federal loan programs: the National Direct Student Loans, Guaranteed Student Loans, Health Education Assistance Loans, Health Professions Student Loans, and Auxillary Loans for Students. In addition, medical students have a wide variety of state, institutional and private programs from which they may seek funds. Each of these programs will have different interest rates, maturity periods, and borrowing limits. Unfortunately, without the data to permit a thorough accounting of loan sources and repayment terms, we cannot know exactly the terms under which an individual student must repay educational borrowing.

We can, however, assume that a considerable portion of most graduate and professional borrowing (except medical students) is through the largest national program -- Guaranteed Student Loans -- which currently carries repayment terms of 9 percent interest and a maximum period of 10 years. Under these terms, a student would have to repay $152 per year for every $1000 they borrowed. Some of the programs available to medical students, however, carry higher interest rates and different repayment periods. In light of this, for this analysis we will assume that a closer weighted approximation to medical student repayment terms is a twelve (12) percent interest rate over ten years. Under these conditions, a medical student's annual repayment would be $172 for every $1000 borrowed.

Future Earnings of Graduate and Professional Students - Estimates of future earnings for selected occupational fields were derived from two sources:

- o the 1978 Census March CPS data and,
- o the 1981 Survey of Doctorate Recipients conducted by the National Research Council.

A previous study of student debt provided estimates of lifetime earnings for 25 occupational categories at the undergraduate and graduate educational levels.[1] For this analysis we inflated those earnings profiles to approximate earnings of 1983 graduates. From the 25 occupational categories we prepared the earnings profiles of:

- o physicians
- o attorneys
- o administrators and business managers and,
- o engineers

The Census data did not provide the earnings of Ph.D. recipients by field of study needed to match the debt data. For this information we used the National Research Council's Survey of Doctorate Recipients which provides salaries of doctoral recipients who graduated between 1966 and 1980, by field of doctorate. These data allowed the creation of income profiles which estimate the expected income of 1983 Ph.D. recipients for the next fifteen years. (The results are displayed in Table 11 for humanities, social science, biological and physical science Ph.Ds).

The Census data reveal that, among the professionals, physicians had the highest median earnings throughout their working lifetimes, followed by engineers, lawyers and businessmen/administrators. When comparing Ph.Ds in various fields using the NRC data we found that those

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[1] See Richard Wabnick and William Goggin, Indebtedness to Finance Post-secondary Education, Washington, D.C.: Educational Testing Service, 1981.

in the physical sciences had the highest income while those in the humanities had the lowest annual earnings. Between these two groups, those who earned their degrees in the social and biological sciences had, on average, similar earnings levels and growth patterns. Surprisingly, for social scientists, the income data show that their median salaries decreased in their second year of work experience compared to their first.[1]

From the estimated annual earnings data we computed discretionary income -- residual income after federal, state, local taxes and basic living expenses were deducted -- for the physicians, lawyers, engineers, administrators and business managers, and arts and sciences Ph.Ds.[2]

Debt Burden Levels

By calculating the ratio of annual debt repayment and discretionary income we arrived at estimates of debt burden.[3] At the median levels of indebtedness, debt burdens ranged between 4 and 20 percent of a student's discretionary income in each year of the repayment period. In all cases, the debt burden was highest in the first years following graduation when income was lowest. As income increases, debt burden diminishes. The following table shows the maximum debt burden for each of these occupational areas.

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[1]It is not statistically reliable to compare the income estimates from Census and NRC because of different sample sizes, different definitions of income and different sampling methods. It is, however, possible to compare the results within each survey to determine which graduate and professional students have relatively higher or lower earnings.

[2]The calculation of discretionary income is described in detail in Terry W. Hartle and Richard Wabnick, Discretionary Income and College Costs, Washington, D.C.: Educational Testing Service, 1982. A paper prepared for the National Commission on Student Financial Assistance.

[3]Our calculations of debt repayment assume equal monthly installments.

Maximum Estimated Debt Burden for Graduate and Professional Students with Median Level Debt

	Median Debt	Maximum Debt Burden
Physicians	$24,500	20.7%
Lawyers	$14,700	25.1%
Administrators/Managers (M.B.A.)	$ 7,125	10.9%
Engineers (M.S. or M.E.)	$ 6,375	7.8%
Arts and Sciences Ph.Ds	$ 7,500	7.8%

Physicians - According to our estimates from GAPSFAS data, a 1983 medical school graduate will have a median debt of about $24,500 and, if married and working full-time, have earnings of about $26,400 in the first full year of work (presumably 1984). By 1987, after three years of residency, during which loan repayment is deferred and an additional year's grace period he would have ernings of about $38,100. The loan, assuming repayment terms of 12 percent for 10 years, would require an annual repayment of about $4200. And after taxes and basic living expenses, the married doctor would have about $20,300 in discretionary earnings. This couple's first year debt burden would be about 21 percent of their discretionary earnings and would fall to 6.8 percent at the end of the repayment period as earnings increase. (For the complete debt burden profile over 10 years of repayment see Table 12).

Some medical students will, of course, borrow more money to complete their education. Indeed, according to the Association of American Medical Colleges (AAMC), 2.9 percent of 1982 MDs had educational debt in excess

of $50,000.[1] For students with such high debt levels, the repayment burden would obviously be much higher. According to Table 12, a married physician with $50,000 in educational debt and average earnings would devote 42.2 percent of discretionary earnings to loan repayment. By the tenth year of repayment, debt burden would have fallen to 14.0 percent. The debt burden of an unmarried doctor would be somewhat smaller -- ranging from 38.0 percent in the first year of repayment to 13.9 percent in the final year.

Lawyers - Law students have the second highest level of educational borrowing. According to GAPSFAS, their median debt in 1983 is just under $15,000. The anticipated income for their first full year of employment is about $20,000 or $21,000 (about $9,000 to $10,000 in discretionary earnings) depending on marital status. With a debt of $15,000 and more favorable repayment terms than doctors (9 percent for 10 years) their annual repayment would amount to a little over $2200. But their debt burden would range from a high of around 25 percent in their first repayment year to nearly 6 percent in their last year. Single lawyers with median debt and income have a slightly lower debt burden, ranging from 22.3 percent at the beginning of repayment to 5.6 percent at the end. (See Table 13 for the complete debt burden profile.)

Administrators and Managers (M.B.A.) - According to the NCES debt data, 1983 graduates of business schools will face an estimated $7100 in debt and as a result will have to repay almost $1100 each year for ten years.[2]

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[1]Source: 1982 AAMC Graduation Survey

[2]Debt level derived by combining median debt of undergraduate business majors with median master's degree business graduates and inflating by 25 percent to approximate 1983 levels.

With gross earnings starting at around $22,500 and discretionary earnings of about $10,000, their initial debt burden will be almost 11 percent. At the end of the repayment period, their debt will be less than four percent of discretionary earnings. (See Table 14).

Among GAPSFAS filers, business students with median indebtedness would have greater educational debt than those in the NCES sample. For students with the GAPSFAS median debt (about $10,000) the repayment burden would be higher. A married student with average income would devote 15 percent of discretionary earnings to loan repayment in the first year and 5 percent in the tenth year. Single students would have slightly lower debt burdens. (Table 14)

Engineers (M.S. or M.E.) - With a median debt of $6375, engineering master's recipients had the lowest debt of the four groups of professional students examined and, therefore, the lowest annual repayment requirements -- about $970.[1] Coupled with their relatively high earnings in their first year of employment, their debt burden will be quite modest. With gross earnings of almost $26,000 and discretionary earnings of almost $12,500 in their first employment year, a married engineer's loan burden would be 7.8 percent of income and would decline to 2.7 percent by the time the loan was repaid. (Table 15).

Arts and Sciences Ph.Ds - The average doctoral recipient has a debt burden of at most eight (8) percent of discretionary earnings during the repayment period. This is the median graduate who has an estimated $7500 debt upon

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[1] Debt level derived by combining median debt of undergraduate engineering majors with median master's degree engineering graduate and inflating by 25 percent to approximate 1983 levels.

receiving the degree and who earns a starting annual salary of $28,665, (according to NRC data) leaving about $15,000 in discretionary earnings. As in the cases discussed above, the debt burden for arts and sciences Ph.Ds declines with time but not as swiftly as for professional students because their earnings do not rise as rapidly. By the final year of repayment their debt burden has fallen to six (6) percent of discretionary earnings. (Table 16)

The Commission staff was interested in examining the difference between the debt burden of Ph.Ds in the arts versus those in the sciences. Although the GAPSFAS debt data do not provide sufficiently accurate estimates of cumulative debt levels by field, the income data allow us to demonstrate the range of debt burden for selected arts and sciences Ph.D. fields at various debt levels. For example, if a Ph.D. in humanities and one in the biological sciences borrowed $10,000 for their education, the humanities Ph.D. would have a maximum debt burden of 14.5 percent while the higher earning biologist would only encumber 11.6 percent of earnings. The difference is, of course, attributable to different income levels. (See Table 17 for comparison). In general, regardless of the level of student debt, humanities students would have the highest debt burdens and physical science students the lowest.

Alternative Debt Burden Assumptions

In making the above debt burden computations, we assumed the money was borrowed under current GSL terms: 9% interest with ten years to repay the loan.[1] There are, of course, a number of other federal loan programs such as the Auxillary Loan to Assist Students (ALAS) and the Health

[1] For medical students, we assumed 12% interest and ten years to repay.

Education Assistance Loans (HEAL) for medical students. The different terms of these programs would alter the repayment burden and, possibly, debt levels, of students who borrow under them. In addition, there are frequent proposals to modify the Guaranteed Student Loan program that would also affect the terms of student borrowing.

To provide some indication of likely student debt levels and burden under modified loan terms, we compared four alternative loan sources:

- o the current Guaranteed Student Loan Program;
- o the GSL program with no in-school interest subsidy;
- o the ALAS program, which allows deferral of principal payments, but not interest payments; and
- o the HEAL program, which has a variable interest rate and allows the deferral of principal and interest through residency.

The repayment implications of these alternatives for equal borrowing levels are displayed in Table 18. According to this table, a student who borrows $5000 under the current GSL program would have an annual repayment of $760 a year in principal and interest. If the in-school interest subsidy is eliminated, however, the student would owe $6575 upon graduation -- resulting in an annual repayment of $1000. Thus, in this example, elimination of the in-school interest subsidy would add $240 annually to the student's repayment costs.

If the student borrowed the same amount under the ALAS program, the total educational debt would be $7100. The student would be required to repay $445 annually while in-school because the interest is not deferred. Upon graduation, the student's annual repayment of principal and interest would be $861.

For medical students who borrowed money under HEAL, $5000 in loans would result in a $7200 obligation upon graduation. Assuming a fifteen year repayment period, students would repay $982 annually.[1]

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[1] HEAL, unlike other federal loan programs, allows students to vary the repayment periods.

Obviously these different program terms would affect student borrowing patterns. The existing GSL program requires the lowest annual repayments and is clearly the most favorable option for students. If this program is altered, for example by eliminating the in-school subsidy, then the choices become more complicated. The ALAS program, has lower annual repayments than the modified GSL program, but ALAS does require substantial in-school interest payments. Thus, a student who has outside financial support, such as parental assistance or spouse earnings, that would cover the in-school interest costs, would have lower annual repayments by borrowing money under ALAS. Without such assistance, however, the student would be forced to either borrow more money than actually needed under ALAS (to meet the in-school costs) or to borrow under GSL and have higher annual repayments.

The choices for medical students are even more complicated because they must also consider HEAL loans. In the HEAL program, both T-Bill rates and the length of the repayment period affect the level of repayment and debt burden. Because HEAL allows students to stretch out repayments for up to 25 years, this program is likely to be attractive to medical students who will incur substantial debts. Moreover, because the repayment period can be extended, the annual repayment amounts can be kept comparable to the terms of other federal loan programs with lower interest rates.

The debt burden under these alternative loan programs is displayed in Table 19. According to these data, the lowest burden occurs under the current GSL program. The ALAS program offers the next lowest debt burden, but the in-school interest payments would make the program less attractive to students. Under the assumptions we have used, the GSL program without the in-school subsidy and the HEAL program have similar debt burdens.

Manageability of Student Debt

Educators and policymakers frequently express concern that some students are relying excessively on loans to finance their education. Thus, as loans become an increasingly important part of financial aid, attention has turned to the question of what constitutes an appropriate and manageable level of education indebtedness. The term "manageable debt," of course, means a level of educational borrowing that can be comfortably repaid during the pay-back period.

Estimating tolerable debt is a challenging task. One problem is simply conceptual: there is no single guidepost that establishes manageable debt levels. Banks frequently allow an individual to spend up to 15 percent of their income on consumer loans, but this is generally a yardstick rather than an inflexible rule. Moreover, borrower perceptions of manageability will vary. A level of debt repayment that some students find oppressive may be difficult, but still manageable, to other borrowers. Given this problem of definition, we have not selected a specific level of debt burden as unamanageable.

Other analysts have been more willing to specify levels of manageability. In 1969, Andre Daniere concluded that reasonable debts would not exceed 7.5 percent of a borrower's after tax income, or 6 percent of before tax income.[1] Robert Hartman, on the other hand, concluded in 1974 that college graduates should accept a repayment level equal to the increase in their earning power resulting from a college education. As a result, he

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[1]Andre Daniere, "The Benefits and Costs of Alternative Federal Programs of Financial Aid to College Students," in The Economics and Financing of Higher Education in the United States: A Compendium of Papers Submitted to the Joint Economic Committee (Washington, D.C.: U.S. Government Printing Office, 1969), 576-578.

suggested that graduates should be willing to earmark up to 15 percent of income before taxes for debt repayment.[1] Froomkin, in his 1974 study of education loans and female borrowers, defined loan burden as six percent of gross income for single women and three percent of total income for married women.[2]

Horch, in a 1978 study, based manageable debt burden on the consumption patterns of borrowers at various income levels. Specifically, he argued that manageable debts should not exceed the "other consumption" category of the Bureau of Labor Statistics (BLS) standards of living indicators. Thus, manageable debts represent the following percentage of after-tax income: 5.4 percent of the BLS low standard of living, 6.6 percent at the intermediate, 7.9 percent at the high standard, and 11.7 percent at twice the higher standard.[3]

These studies reveal a lack of agreement about manageable debt levels: the estimates range from a low of 3 percent of gross income for married women (Froomkin) to 15 percent of after tax income (Hartman). The differences between these estimates illustrate the hazard of trying to select a single figure to represent an unreasonable debt burden.

Despite the variation, the highest manageable debt burden is Hartman's 15 percent, a level that is considerably higher than the other studies. In our analysis, several categories of students with median debt and

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[1] Robert W. Hartman, Credit for College (New York: McGraw Hill, 1971), p.14.

[2] Joseph Froomkin, Study of the Advantages and Disadvantages of Loans to Women, Prepared for the Department of Health, Education and Welfare, December 1974; distributed by the National Technical Information Service, U.S. Department of Commerce.

[3] Dwight Horch, Estimating Manageable Educational Loan Limits for Graduate and Professional Students (Princeton, N.J.: Educational Testing Service, March 1978).

incomes (i.e. lawyers and physicians) have debt burdens that exceed 15 percent of discretionary income in the first years of repayment. Since discretionary income (income less taxes and consumption) is less than after tax income, we may assume that a debt level that is " unreasonable" as a portion of after tax income will also be "unreasonable" as a share of discretionary income.[1]

If we assume that some borrowers will have unreasonable repayment burdens, how might the problems they face be alleviated? One approach, the selection of a debt level ceiling for all students would not be desirable unless it was sensitive to variations in future income and the repayment potential of students in different fields of study. Another solution, selecting a debt burden ceiling also seems inappropriate because of the difficulty of predicting income levels that would be satisfactorily accurate for large groups of graduate and professional students. Moreover, either of these approaches may limit student flexibility to select the education program they desire and to finance it as they wish.

One possible solution to the manageability problem is to make flexible loan repayment terms available. Whether an educational loan is manageable or unmanageable is a function of a variety of factors, including the amount borrowed and income. A number of other factors also influence manageability: the repayment period, the interest rate, and whether equal or graduated repayments are required. By varying these loan terms, it is often possible to make an unmanageable loan manageable.

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[1]Consider, for example, a married physican with median educational debt ($24,500) and median earnings ($38,100) in the first year of repayment. Under our assumptions, the annual repayment would be $4214. His first year debt burden is 11.0 percent of gross income, 14.7 percent of after tax income, and 20.7 percent of discretionary income.

Flamer and Horch analyzed this issue in their 1982 study, Talented and Needy Graduate Students. According to their data, 46% of arts and sciences Ph.Ds, 86% of law graduates, and 83% of medical doctors had unmanageable loan levels when repayment was based on a ten year schedule, with equal installments and a 10 percent interest rate.[1] By changing the repayment plan, however, almost all students had manageable debt. Using a 15 year repayment schedule with graduated installments, the number of borrowers with unmanageable debt fell to 7 percent in the arts and sciences, 2 percent in law, and 5 percent in medicine.

This example does not, of course, provide a justification for a wholesale change in student loan terms. It does, however, provide some idea of the extent to which debt burden may be modified simply by varying repayment terms. Obviously, students cannot modify repayment terms without the assistance of lenders. The statutory authority to make such modifications already exists, but private lenders generally prefer to use existing loan terms. As a result, the design of flexible repayment schedules for students with the greatest debt burdens will probably require congressional and executive branch encouragement.

Some students already have access to refinancing opportunities. The federal government now allows students who have a minimum level of borrowing (generally $7500 in total educational loans) to refinance their debt through the Student Loan Marketing Association's Options program. Under this program, students consolidate their debt into a single loan and select a repayment schedule (either fixed or graduated) that meets their needs. The repayment period can be as long as twenty years. The interest rate on consolidated loans is currently seven percent.

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[1] Manageability was defined in terms of the criteria in Horch's 1978 study.

The low interest charged on consolidated loans led Congress to eliminate Sallie Mae's consolidation authority as part of the Budget Reconciliation Act of 1981. There are a number of efforts underway to preserve this authority, but, unless Congress acts, the Options program will end in July 1983. Given the flexibility offered by this program and the high debt levels facing some students, ending the consolidation authority would undoubtably create a hardship for those who have borrowed heavily to finance their education.

Summary and Conclusions

Summary. There are widespread fears that postbaccalaureate students are assuming excessive debt to finance their education. These debt, it is believed, will create an unreasonable burden when students begin to repay the loans. Others worry that large educational debt will force students to pursue financially rewarding occupations, influence marriage or family plans, and affect students' ability to make large consumer purchases.

Congress recognized the importance of this issue in the Higher Education Amendments of 1980 when it instructed the National Commission on Student Financial Assistance to examine educational indebtedness. This study was undertaken to provide the National Commission with some information on this question. Its objectives were twofold. First, it sought to determine the absolute level of graduate and professional student debt by field of study. Second, the study examined whether the amount of debt would create an excessive burden when the loans were repaid.

To investigate student debt levels, we gathered information on the amount of student borrowing from data bases available from the Association of American Medical Colleges, the Graduate and Professional Student Financial Aid Service, and the National Center for Education Statistics. To determine whether the level of borrowing would create a repayment burden, debt levels were matched with estimated income for the major fields of study. The income calculations were derived from Census Bureau and National Research Council estimates. None of the data bases employed provides clear, unambiguous information on graduate and professional school debt for all fields of study. Nonetheless, by reviewing the

evidence contained in all these data sources, it is possible to compile a picture of debt levels and debt burden that provides some insight into the issues.

The level of student borrowing varied considerably. Students in medicine and law had the highest estimated debt while students pursuing a masters or Ph.D in the arts and sciences showed, on average, lower indebtedness. More specifically, the estimated median cumulative debt of GAPSFAS filers was: business, $9900; law $14,700; medicine, $24,500; arts and sciences Ph.D., $6800; and arts and sciences master's $6000.

The percentage of students reporting debt also varied by field. According to NCES data, 35.2 percent of all bachelor's degree recipients had educational debt and 23.4 percent of the master's recipients reported such borrowing.[1] A much higher percentage of professional students borrow to finance their education. Whether measured by GAPSFAS (97.5 percent) or AAMC (81.2 percent) data, the vast majority of medical students borrow money to complete their education. A high percentage of business and law students also use loans to meet educational costs. In the arts and sciences, the percentage of students with debt varied by field of study. Students seeking a master's degree in the humanities, for example, were much more likely to report debt than were students in engineering or education.

The burden of repaying educational loans also varied considerably. At median levels of indebtedness, debt burden ranged between 8 and 25 percent of a student's discretionary income (that is, income after taxes

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[1] Among graduate students, the NCES figures refer only to students who incurred debt while receiving a master's degree. Undergraduate debt is not included.

and basic living expenses are deducted). According to these data, law students with median indebtedness and median income would have the greatest debt burden -- 25.1 percent of discretionary income for a married student in the first year of repayment. By contrast, engineers are likely to have the lowest repayment burden -- 7.8 percent of income. Among other occupational areas, the debt burden is as follows: doctors (20.7 percent); administrators and managers (10.9 percent); and arts and sciences Ph.Ds, (7.8 percent). Importantly, in all cases the debt burden is highest in the first years of repayment when income is lowest. Over time, as income rises, debt burden diminishes.

For individuals with above average borrowing, or below average incomes, debt burden will be higher. For example, married medical students who borrow $50,000 to finance their education and have an average income, will devote 42 percent of their discretionary income to loan repayment the year they begin to repay their loans.[1] By the final year of repayment, approximately 14 percent of income will be spent repaying educational debt.

Conclusions and Recommendations. The evidence gathered in this study does not lend itself to a simple set of conclusions. The data do show that many students borrow money for educational purposes, and that the amount of borrowing and the percentage of students with debt has increased in recent years. The data also suggest that the level of debt burden will vary considerably, depending on the field of study and the amount of money borrowed. Students in professional fields are most likely to have high debt levels and high debt burdens.

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[1] According to AAMC, approximately 3 percent of medical students would have educational debts of $50,000 or more. In this example, we assume a 10 year repayment period.

There are, however, a number of caveats that must be considered. First, while this evidence suggests that many students will not have great difficulty repaying their loans, it also reveals that some students will borrow large amounts of money and will be saddled with large repayments. This is especially likely in medicine and law where there are limited sources of grant and scholarship assistance available. For students with such large debts, repaying student loans is undoubtedly a real financial burden.

Nor do these data provide any evidence on students who incur educational debt but leave graduate or professional school before completing their degree. A sizable percentage of students who enroll in graduate school fail to earn the degree they initially sought. Many of these students will leave school with educational debt but will have earnings below those of their classmates who complete their educational program. The extent to which high educational borrowing encourages students to discontinue their education and the repayment burden faced by these students is unclear.

Finally, the available evidence does not indicate how various levels of debt affect student decisions about career choice, family information, or consumer purchases. While we may safely assume that high debt levels will have some influence on these decisions, the extent of the influence cannot be readily determined from any available information.

A second caveat relates to loan manageability. These data do not allow for a determination of what is a "reasonable" repayment burden and what is "unreasonable." A level of reasonableness could be established by arbitrarily choosing a debt burden level -- such as 15 percent -- and

assuming borrowing above that level is unreasonable and borrowing below it is reasonable. Many financial institutions employ a similar guideline when they determine a reasonable level of consumer debt for individuals. Unfortunately, such a determination would not be based on any empirical evidence and would be a weak reed on which to base student aid policy.

A third point relates to the future of student borrowing. While most students are currently able to repay their educational debt, it is not clear that this will be true in the future. In recent years, college costs have increased much faster than income. At the same time, the federal government and many states have reduced expenditures for student assistance programs. In addition, federal funds for research -- long a source of support for graduate students -- have also been reduced.

If postbaccalaureate costs continue to increase and grant and fellowship assistance remains scarce, students will be forced to borrow increasing amounts of money to acquire their education. At a minimum, this would increase student debt levels. In some cases, however, it may force students to choose between not pursuing the educational program they desire or pursuing the program and incurring high levels of debt.

Drawing policy recommendations from this evidence is difficult. The data suggest that some students -- especially those in professional programs -- are borrowing large sums of money for their education and will face sizable repayment burdens. There are, however, problems obtaining accurate and detailed information about student borrowing, suggesting the need for cautious interpretation. With this complexity in mind, we offer the following recommendations.

First, <u>better information is needed about graduate and professional education especially with reference to student borrowing patterns</u>. There

is very little evidence about the demographics of graduate and professional education in the United States. It is, for example, impossible to get accurate, comparable data on trends for such information as student enrollment and tuition charges.

Given the absence of such basic data, it is not surprising that there are few sources that address the financing of graduate and professional education. This study relied on the best available information, but -- because of problems in the data bases -- we were forced to make numerous concessions and assumptions to complete the analysis. Informed policymaking demands more accurate and consistent information. With respect to graduate and professional education, such information is simply not available. To address this problem, we urge that the Congress, the Executive Branch, and the higher education groups work cooperatively to define the information about postbaccalaureate education that should be gathered regularly. One key element should be data on the financing of graduate and professional education.

Second, this evidence suggests that some students are incurring substantial debt in completing their education. For these students, educational borrowing may create a signficant burden when repayment begins. To address the problem of high debt burdens, we recommend that students be given flexible repayment options to ease their financial burdens.

There is some precedent for varying the repayment terms to ease the burden on students. Medical students, for example, may repay HEAL loans over a 10 to 25 year period. By electing a longer schedule, students will reduce the amount of funds to be repaid in a single year. Similarly, the Student Loan Marketing Association (Sallie Mae) has the authority to

consolidate student loans for individuals who have borrowed under different programs and at different interest rates and terms. Under the Sallie Mae program, longer repayment schedules are made available to students whose educational borrowing reaches a specified level. The program also allows for a graduated repayment schedule. Under this scheme, students repay smaller amounts of money in their first years after graduation, and larger amounts in later years.

Finally, because there is anecdotal evidence to suggest that student debt levels are increasing rapidly, student borrowing patterns should be carefully monitored. The current data about student debt should not be regarded as an indication that student borrowing will not become a problem in the future. In some high-cost undergraduate institutions, students are borrowing large amounts of money to complete their bachelor's degrees.[1] Moreover, in some professional programs -- especially law and medicine -- heavy debt burdens are increasingly common. As tuitions continue their inexorable climb, student debt levels will also grow. If starting salaries for graduate and professional students do not increase at a comparable rate, debt burden will become more of a problem for many students than it is at present. To address this issue, it is imperative that developments in this area be watched carefully.

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[1]At Boston University, for example, the average undergraduate borrowing for 1982-1983 was $3494. Four years of borrowing at this level would leave students nearly $14,000 in debt -- before they begin postbaccalaureate education. Approximately 40 percent of the undergraduates at Boston University borrow money.

Table 1
Graduate/Professional Student Enrollments and Charges: 1971 to 1981

Year	All Graduate Students		Medical Students 1/		Law Students		Other Graduate and First Professional Students	
	Number (in 000's)	Charges	Number (in 000's)	Charges 2/	Number (in 000's)	Charges	Number (in 000's)	Charges
1971	1027.0	$1997	66.6	$2454	96.9	n.a.	863.5	$1885
1972	1059.8	n.a.	69.2	2565	103.4	n.a.	887.2	n.a.
1973	1116.5	2283	74.3	2784	106.8	n.a.	935.4	2252
1974	1187.9	2504	79.4	3055	111.2	n.a.	997.3	2399
1975	1288.1	n.a.	81.8	3259	116.8	n.a.	1089.5	n.a.
1976	1270.0	n.a.	84.6	3604	123.3	n.a.	1062.1	n.a.
1977	1336.3	n.a.	n.a.	4075	n.a.	n.a.	n.a.	n.a.
1978	1333.6	n.a.	96.6	4589	119.1	n.a.	1290.7	n.a.
1979	1333.2	n.a.	n.a.	5587	n.a.	n.a.	n.a.	3592
1980	1385.4	4077	102.5	6240	119.7	n.a.	1163.2	3664
1981	1375.9	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	4180
Annual Rate of Growth(%)	3.0	8.3	4.9	10.9	2.4	-	3.4	8.3

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1/ Includes doctors, dentists and veterinarians.

2/ Charges are average for first-year medical students. Average over four years of medical school may be somewhat higher.

Sources: Enrollment data -- National Center for Education Statistics, Fall Enrollment in Higher Education (selected years); Charges data -- NCES, Digest of Education Statistics (selected years) and unpublished data; Medical student charges -- derived from tuition and fees data compiled by Health Resources Administration from American Medical Association data and NCES room and board charges for university graduate students.

Table 2

Baccalaureate Debt by Field of Study
and Control of Institution: 1980 College Graduates

	Undergraduate Field of Study								
ALL INSTITUTIONS	All Fields	Humanities	Social Science	Health Prof/ Biological Science	Physical Science	Engineering	Business	Education	Other
number of graduates	893,200	79,100	232,400	138,300	51,500	77,200	187,000	126,900	800
% with debt	35.2	31.2	35.4	37.2	37.0	35.4	32.2	35.8	42.8
mean debt ($)	3200	2700	3100	3300	4100	3600	2900	3400	3500
median debt ($)	2500	2500	2500	2500	3100	2700	2400	2400	1600
PUBLIC INSTITUTIONS									
number of graduates	592,500	43,200	152,000	95,200	31,100	59,500	117,700	93,100	800
% with debt	32.6	22.0	32.4	33.8	34.2	34.2	29.4	33.6	50.0
mean debt($)	2800	2500	2500	2900	3500	3300	2500	3200	3500
median debt ($)	2000	1900	2000	2500	2500	2500	2000	2000	1600
PRIVATE INSTITUTIONS									
number of graduates	300,700	35,800	80,400	43,100	20,400	17,800	69,300	33,800	-
% with debt	42.2	42.8	41.2	45.4	41.6	38.8	37.6	44.2	-
mean debt ($)	3800	2900	4000	4000	5000	4700	3500	3800	-
median debt($)	3000	2500	3000	3000	4500	5000	3000	2800	-

Source: National Center for Education Statistics, 1981 Survey of Recent College Graduates

Table 3

Master's Debt by Field of Study and
Control of Institution: 1980 College Graduates

	Graduate Field of Study								
ALL INSTITUTIONS	All Fields	Humanities	Social Science	Health Prof/ Biological Science	Physical Science	Engineering	Business	Education	Other
number of graduates	280,300	17,100	50,500	24,400	14,800	16,700	54,700	102,000	200
% with debt	23.4	42.2	33.4	40.8	22.8	19.6	23.4	19.8	-
mean debt ($)	4400	5700	4200	6800	3800	3300	4600	2800	1000
median debt ($)	2500	2500	3000	4200	1600	2400	3300	2000	-
PUBLIC INSTITUTIONS									
number of graduates	187,200	13,000	34,200	15,600	9,700	10,300	24,000	78,200	200
% with debt	22.0	36.8	28.0	38.0	28.6	16.0	27.2	18.4	-
mean debt($)	3710	2940	3480	5820	4430	4080	4710	2460	-
median debt ($)	2500	2000	2200	2800	2800	3000	3000	2000	-
PRIVATE INSTITUTIONS									
number of graduates	93,000	4,000	16,300	8,800	5,100	6,400	28,700	23,700	-
% with debt	28.2	60.0	44.2	45.8	13.6	27.2	19.6	24.8	-
mean debt ($)	5440	11320	5330	8460	1210	2430	4450	3720	-
median debt ($)	3900	5000	3000	7000	1400	2000	4500	2100	-

Source: National Center for Education Statistics, 1981 Survey of Recent College Graduates

Table 4

Education Debt Distribution By Degree and Control: 1980 College Graduates

Degree/Control	Total Number	Number with Debt	25% had debt lower than	50% had debt lower/higher than	25% had debt higher than
All Degree Recipients	1,173,500	380,000	$1,200	$2,500	$5,000
At Public Schools	780,000	244.300	1,100	2,000	4,000
At Private Schools	393,500	135,700	2,000	3,000	5,500
All Baccalaureates	893,200	314,400	1,300	2,500	4,500
At Public Schools	592,500	193,100	1,000	2,000	3,600
At Private Schools	300,700	121,300	2,000	3,000	5,000
All Master's	280,300	65,600	1,500	2,500	5,000
At Public Schools	187,200	41,300	1,400	2,500	5,000
At Private Schools	93,000	24,300	1,500	3,900	6,500

Source: National Center for Education Statistics, 1981 Survey of Recent College Graduates.

Table 5

Graduate and Professional
Student Debt Levels, by Year in School

Business

Entering Year	Lower 25th Percentile	Median Debt	Upper 25th Percentile	Percent Reporting Debt
1	2200	4100	6500	53.2
2	5000	7000	10000	90.4
Estimated Cumulative	7800	9900	13500	

Cumulative debt totals estimated by adding difference between first and second year borrowing to borrowing levels at start of final year.

Source: Graduate and Professional School Financial Aid Service filers for 1982-1983.

Table 6

Graduate and Professional
Student Debt Levels, by Year in School

Law

Entering Year	Lower 25th Percentile	Median Debt	Upper 25th Percentile	Percent Reporting Debt
1	2500	4700	7000	63.4
2	5000	7400	10100	94.4
3	10000	12000	15000	96.2
Estimated Cumulative	12500	14700	18100	

Source: Graduate and Professional School Financial Aid Service filers for 1982-1983.

Table 7

Graduate and Professional
Student Debt Levels, by Year in School

Medicine

Entering Year	Lower 25th Percentile	Median Debt	Upper 25th Percentile	Percent Reporting Debt
1	2700	5000	7500	64.8
2	6400	9500	13700	95.2
3	11500	15700	20000	96.8
4	16500	20000	20000	97.5
Estimated Cumulative	20200	24500	26200	

	Premedical	Medical	Total
AAMC Cumulative Debt	$4017	$20149	$24166

Source: Graduate and Professional School Financial Aid Service filers for 1982-1983.

Table 8

Graduate and Professional
Student Debt Levels, by Year in School

Arts and Sciences, Ph.D.

Entering Year	Lower 25th Percentile	Median Debt	Upper 25th Percentile	Percent Reporting Debt
1	2500	4500	6900	55.4
2	3900	5000	8000	68.5
3	3700	6800	10000	67.2
4	4000	7000	11200	69.5
5	3100	6800	11500	71.0

Estimated
Cumulative

Source: Graduate and Professional School Financial Aid Service filers for 1982-1983.

Table 9

Graduate and Professional
Student Debt Levels, by Year in School

Arts and Sciences, Masters

Entering Year	Lower 25th Percentile	Median Debt	Upper 25th Percentile	Percent Reporting Debt
1	2100	4000	6400	55.4
2	4700	5200	8300	80.9
Estimated Cumulative	7300	6000	10200	

Source: Graduate and Professional School Financial Aid Service filers for 1982-1983.

Table 10

Median Borrowing of Graduate and Professional Student Financial Aid Service Filers by Field, Year Entering School and Estimated Cumulative Total, All Students

Field	Year 1	Year 2	Year 3	Year 4	Year 5-6	Estimated Cumulative
Business	4100	7000				9700
Law	4700	7400	12,000			14,700
Medicine	5000	9500	15,700	20000		24,500
Arts & Sciences Ph.D.	4500	5000	6800	7000	6800	
Humanities	4400	6500	6400	5800	7000	
Social Sciences	4200	5000	6500	8400	7600	
Biological	4700	5000	5000	8000	5200	
Physical	5000	4000	5000	400	4300	
Other	4500	5000	6800	6000	7700	
Arts & Sciences Masters	4000	5200				6400
Humanities	4200	5900				7600
Social Sciences	4100	5200				6300
Biological	4000	6000				8000
Physical	3500	5000				6500
Other	4300	5500				6700

Source: Graduate and Professional School Financial Aid Service filers for 1982-1983. Estimated cumulative debt derived by adding difference between first and second year median debt to final year debt level. Curriculum pattern of Arts and Sciences Ph.Ds does not permit calculation of unambiguous cumulative debt levels.

Table 11

Estimated Earnings of Arts and Sciences Doctoral Recipients, by Field of Study: 1983-1992

Year	All Fields	Humanities	Social Science	Biological Science	Physicial Science
1983	28665	22113	27729	26442	30888
1984	28197	23517	26559	26091	31005
1985	29750	24276	28560	29274	34748
1986	30583	25347	29988	29988	33558
1987	32400	26160	31200	32400	35520
1988	33558	27251	31654	32725	36414
1990	36176	29274	35819	35938	38318
1991	36771	29988	36295	36771	39151
1992	38556	31654	38318	36533	42007

Source: National Research Council, 1981 Survey of Doctorate Recipients. 1981 earnings inflated to estimate current year earnings.

Table 12

Estimated Debt Burden of Physicians (repayment: 12% for 10 years) 1983 Graduates (median debt = $24,500)

Year	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Annual Repayment ($)	4214	4214	4214	4214	4214	4214	4214	4214	4214	4214
Discretionary Earnings ($)										
single	22683	25967	29474	33390	37543	42136	47415	52961	59007	65563
married (1 wage earner)	20330	23474	26831	30588	34573	38988	44078	49423	55258	61589
Debt Burden (%)										
single	18.6	16.2	14.3	12.6	11.2	10.0	8.9	8.0	7.1	6.4
married	20.7	18.0	15.7	13.8	12.2	10.8	9.6	8.5	7.6	6.8

Estimated Debt Burden of Physicians with $50,000 in Educational Debt (repayment: 12% for 10 years)

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Annual Repayment ($)	8597	8597	8597	8597	8597	8597	8597	8597	8597	8597
Debt Burden (%)										
single	38.0	33.1	29.2	25.7	22.9	20.4	18.2	16.2	14.6	13.1
married	42.2	36.7	32.0	28.2	24.9	22.0	19.6	17.4	15.5	14.0

Note: Repayment begins in 1987 for these 1983 medical school graduates. This assumes 4 years deferment for their residency training and the loan grace period.

Sources: Debt data from Graduate and Professional Student Financial Aid Service. Earnings data from updated 1978 Census Current Population Survey.

Table 13

Estimated Debt Burden of Lawyers (repayment: 9% for 10 years)
1983 Graduates (median debt = $14,700)

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Annual Repayment ($)	2235	2235	2235	2235	2235	2235	2235	2235	2235	2235
Discretionary Earnings ($)										
single	10002	12158	14279	17506	20612	23909	27541	31341	35470	40129
married (1 wage earner)	8935	10554	13628	16379	19456	22709	26285	30014	34060	38628
Debt Burden (%)										
single	22.3	18.4	15.7	12.8	10.8	9.3	8.1	7.1	6.3	5.6
married (1 wage earner)	25.1	21.2	16.4	13.6	11.5	9.8	8.5	7.4	6.6	5.8

Sources: Debt data from Graduate and Professional Student Financial Aid Service. Earnings data from updated 1978 Census Current Population Survey.

Table 14

Estimated Debt Burden of Administrators and Managers (repayment: 9% for 10 years) 1983 M.B.A. Graduates (median debt = $7,125)

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Annual Repayment($)	1083	1083	1083	1083	1083	1083	1083	1083	1083	1083
Discretionary Earnings($)										
single	10176	11670	13479	15397	17546	19805	22309	24924	27791	31082
married (1 wage earner)	9967	11458	13277	15191	17335	19572	22047	24613	27424	30659
Debt Burden (%)										
single	10.7	9.3	8.0	7.0	6.2	5.5	4.9	4.3	3.9	3.5
married (1 wage earner)	10.9	9.5	8.2	7.1	6.2	5.5	4.9	4.4	3.9	3.5

Estimated Debt Burden of Administrators and Managers with $10,000 in Educational Debt (repayment: 9% for 10 years)

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Annual Repayment($)	1519	1519	1519	1519	1519	1519	1519	1519	1519	1519
Debt Burden (%)										
single	15.0	13.0	11.2	9.8	8.7	7.7	6.9	6.0	5.5	4.9
married	15.3	13.3	11.5	10.0	8.7	7.7	6.9	6.2	5.5	4.9

Sources: Debt data from NCES 1981 Survey of Recent College Graduates. Debt figure calculated by combining median debt of undergraduate business major with median master's degree business graduate and inflating by 25 percent to approximate 1983 levels. Earnings data from updated 1978 Census Current Population Survey.

Table 15

Estimated Debt Burden of Engineers (repayment: 9% for 10 years)
1983 Graduates (M.S. or M.E. with median debt = $6,375)

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Annual Repayment ($)	969	969	969	969	969	969	969	969	969	969
Discretionary Earnings ($)										
single	13900	15507	17499	19619	22014	24546	27352	30287	33508	37204
married (1 wage earner)	12420	14028	16036	18183	20618	23192	26067	29075	32386	36192
Debt Burden (%)										
single	6.9	6.2	5.5	4.9	4.4	3.9	3.5	3.2	2.9	2.6
married (1 wage earner)	7.8	6.9	6.0	5.3	4.7	4.2	3.7	3.3	3.0	2.7

Sources: Debt data from NCES 1987 Survey of Recent College Graduates. Debt figure calculated by combining median debt of undergraduate engineering major with median master's degree engineering graduate and inflating by 25 percent to approximate 1983 levels. Earnings data from updated 1978 Census Current Population Survey.

Table 16

Estimated Debt Burden of Arts and Sciences Doctorates (repayment terms: 9% for 10 years) 1983 Graduates (median debt = $7,500)

Year	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Annual Repayment ($)	$ 1140	1140	1140	1140	1140	1140	1140	1140	1140	1140
Discretionary Earnings ($)	$15378	14660	15435	15646	16572	16977	17378	17928	17821	18575
Debt Burden (%)	7.4	7.8	7.4	7.3	6.9	6.7	6.6	6.4	6.4	6.1

Sources: Debt data from Graduate and Professional Student Financial Aid Service. Earnings data from updated National Research Council 1981 Survey of Doctorate Recipients.

Table 17

Comparison of Arts and Sciences Doctorate Debt Burdens, by Field Study at Equal Debt Levels

If Total Debt is	Annual Repayment at 9% for 10 years	Maximum Debt Burden (annual repayment) (lowest discretionary earnings)				
		All Arts and Sciences Ph.D.	Humanities	Social Science	Biological Science	Physical Science
$ 5000	$760	5.2	7.3	5.7	5.8	4.5
6000	912	6.2	8.7	6.8	7.0	5.4
7000	1064	7.3	10.2	7.9	8.1	6.3
8000	1216	8.3	11.6	9.1	9.3	7.3
9000	1368	9.3	13.1	10.2	10.5	8.2
10000	1520	10.4	14.5	11.3	11.6	9.1
15000	2280	15.6	21.8	17.0	17.4	13.7

Table 18

Comparison of Guaranteed Student Loans (GSL), Auxillary Loans to Students (ALAS), Health Education Assistance Loans (HEAL) Programs for Principal and Subsidy Payments

	Amount to be repaid/In-school interest payments/Annual repayment			
	Guaranteed Student Loans		ALAS Loans	HEAL (for Medical Students only)
Amount Borrowed	9% subsidized[1]	9% not subsidized but deferred[2]	12% not subsidized, not deferred[3]	T-Bill + 3.5%, not subsidized but deferred[4]
$ 5,000	$ 5,000/ - /$ 760	$ 6,575/ - /$1,000	$ 7,100 /$ 445/ $ 861	$ 7,200/ - /$ 982
10,000	10,000/ - /1,520	13,150/ - / 2,000	14,200 / 890/ 1,722	14,400/ - / 1,964
15,000	15,000/ - /2,280	19,725/ - / 3,000	21,300 /1,335/ 2,583	21,600/ - / 2,946
20,000	20,000/ - /3,040	26,300/ - / 4,000		28,800/ - / 3,928
25,000	25,000/ - /3,800	32,875/ - / 5,000		36,000/ - / 4,910
30,000				43,200/ - / 5,892
40,000				57,600/ - / 7,856

[1] This is current law.

[2] Assumes 4 year undergraduate borrowing and 3 years graduate borrowing. Interest is deferred and accrues at 9% from time of disbursement to time of repayment. Repayment period is 10 years.

[3] Assumes 4 years undergraduate borrowing and 3 years of graduate borrowing. Interest is not deferred. Repayment period for principal is 10 years.

[4] Undergraduate borrowing assumes 4 years medical school and 4 years of residency. Interest is deferred and accrues at a rate of T-Bill plus 3.5 percent while in school until repayment begins. Assumes 1983 T-Bill rate of 7.5%. Repayment period for principal and deferred interest can range from 10 to 25 years. We assume 15 years for these computations.

Table 19

Comparison of Debt Burden Under Guaranteed Student Loans (GSL), Auxillary Loans to Students (ALAS), Health Education Assistance Loans (HEAL) Programs

Debt Burden Under Alternative Loan Programs
(as percent of discretionary income)

Guaranteed Student Loans		ALAS Loans		HEAL (for Medical Students only)
Debt Burden Under Current GSL Program	9% not subsidized but deferred	12% not subsidized, not deferred		T-Bill + 3.5%, not subsidized but deferred
5	6.6	5.7		6.5
6	7.9	6.8		7.8
7	9.2	7.9	plus	9.0
8	10.5	9.1	interest	10.3
9	11.8	10.2	payments	11.6
10	13.2	11.3	while in	12.9
15	19.7	17.0	school	19.4
20	26.3	22.7		25.8
25	32.9	28.3		32.3